# Drought Planning:

## A new perspective on reducing drought impacts

# Topics

- Drought concepts & challenges
- Drought planning & mitigation
- Plan implementation
- Local drought impact groups
- Conservation tips

# Drought in Arizona

Drought is a prolonged period of below-average precipitation severe enough to negatively impact the environment and human activities

- Current drought began in the late 1990s
- Severity of the impact varies by location
  - Urban vs. rural areas
- Drought Emergency Proclamation in effect since June 1999
  - Governmental entities can provide response and recovery assistance
  - Disaster Designation by the U.S. Department of Ag in May 06
- Drought Declaration issued on May 22, 2007

# Drought: Key Concepts

- One rain does not end a drought
- Impacts domestic water supplies, ranching and farming production, vegetation, forest health and wildlife populations

# Drought Challenges

"Drought is the Rodney Dangerfield of natural hazards… it doesn't get the respect that other natural hazards do."

- On average, drought is the most expensive natural disaster – $6-8 billion annually in losses

- Slow-onset, effects accumulate slowly, hard to determine beginning and end

# Drought Planning

- Shifts focus from crisis management to RISK MANAGEMENT
  - Improved monitoring, forecasts, early warning systems
  - Preparedness and mitigation plans
  - Emergency response programs are the last resort – not the only

# Drought Planning

Hazard Mitigation –

- any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards

# Why Drought Planning?

- Drought isn't just about climate – it has a social component over which we have control
- More effective than drought response
  - Emergency relief is too little too late
- Less expensive than response

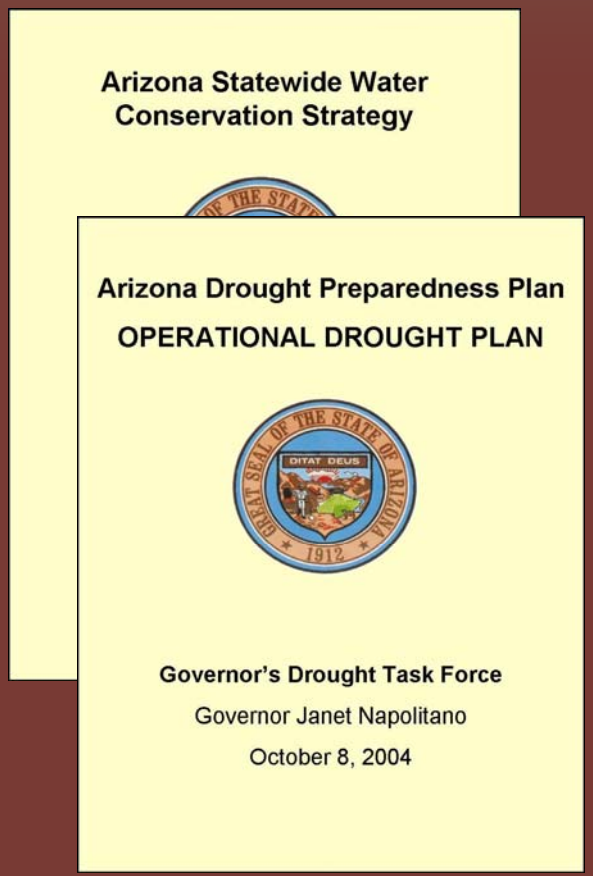
We cannot control the atmosphere in order to prevent drought; however, we can take action to reduce our vulnerability to drought.

# How Can We Mitigate Drought?

- Use natural resources in a sustainable manner
- Conflict resolution among water users
- Augment water supplies, reduce water demand
- Monitoring and early warning systems
- Risk assessments
- Improve coordination among government agencies
- Public education

Conserve

# Governor's Drought Task Force




## *Arizona Drought Preparedness Plan* - 2004

- Identify the impacts of drought to the various sectors of water users
- Define sources of drought vulnerability
- Outline monitoring programs
- Prepare response options and mitigation strategies to reduce drought impacts

AZ's plan emphasizes drought planning and preparedness, innovation and action

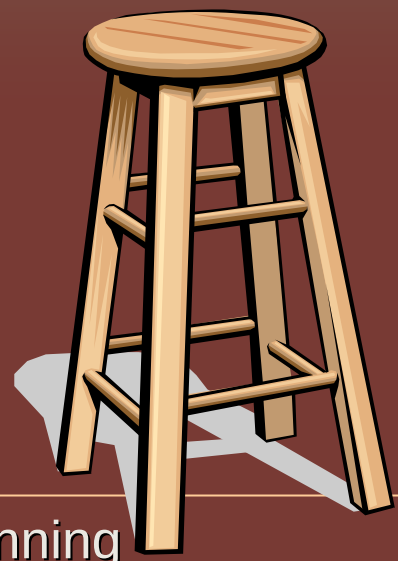
# Statewide Drought Program

www.azwater.gov


Providing statewide assistance for drought preparation, mitigation and response

"State efforts should not attempt to preempt local prerogatives, but rather endeavor to inform, guide, and assist local efforts" (Western Governor's Association).

# State Water Conservation Programs

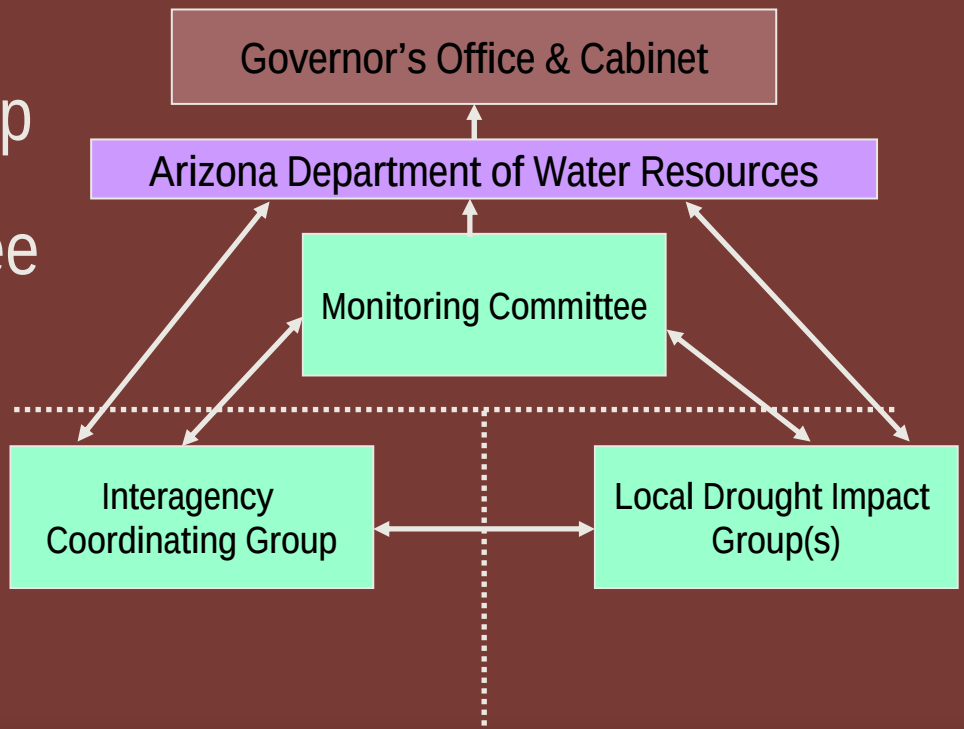
- Planning
- Funding & Assistance
- Education & Outreach
- Technology Transfer

By creating a culture of conservation, we can greatly reduce the impacts of drought on our natural resources, economy, and quality of life.

# Drought Plan Implementation

Key to the implementation of the *Arizona Drought Preparedness Plan* is the coordination of three structured groups

- Interagency Coordinating Group
- Monitoring Technical Committee
- Local Drought Impact Groups



# Interagency Coordinating Group

- Directs state agency action to:
  - Assess
  - Implement
  - Develop response options
- Identifies needs for additional resources
- Advises Governor on drought action
- Reviews *Arizona Drought Preparedness Plan*
  - Recommendations for:
    - Improving monitoring
    - Implementation
    - Response

**Provides an integral mechanism to coordinate and integrate drought planning and management on all lands within Arizona**

# Drought Declaration

**May 22, 2007 – Executive Order 2007-10**

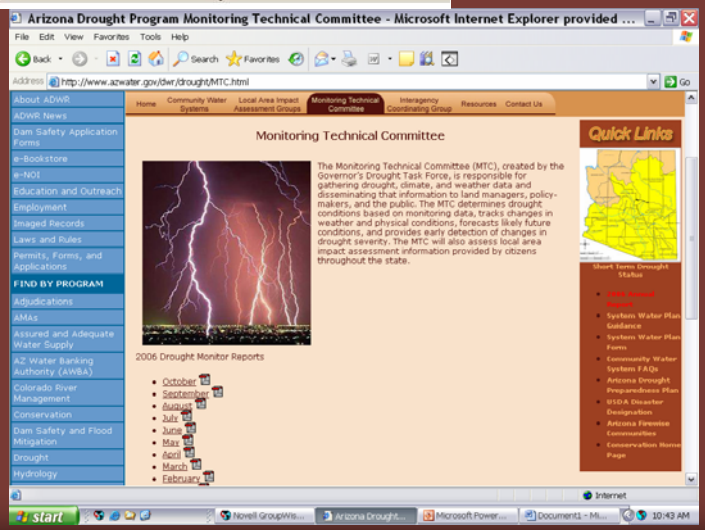
- Raise awareness of Arizona drought and encourage conservation
- 2nd decade of a statewide drought - persistent
- Calls upon citizens, businesses, water facilities, schools, governmental entities
- Implementation of the *Arizona Drought Preparedness Plan* and formation of local drought impact groups
- Minimize risk of a drought emergency

Fourteen state agencies reported 640 million gallons of water saved in 2007compared to 2004 consumption rates, representing a 16% reduction.

# Monitoring Technical Committee



- Monitors and assesses drought conditions
- Produces monthly Drought Monitor Reports
- Briefs the Governor's Drought Task Force Interagency Coordinating Group on drought conditions
- Provides presentations and technical assistance to Local Drought Impact Groups



# Drought Monitor Report

Monthly Publication

- Drought Status
- Impacts
- Arizona Reservoir Status
- Vegetation Health
- Mountain Streamflow and Precipitation
- Temperature and Precipitation
- Weather Outlook

Data provided by USDA-NRCS, graphic provided by University of Arizona - CLIMAS (Climate Assessment for the Southwest)

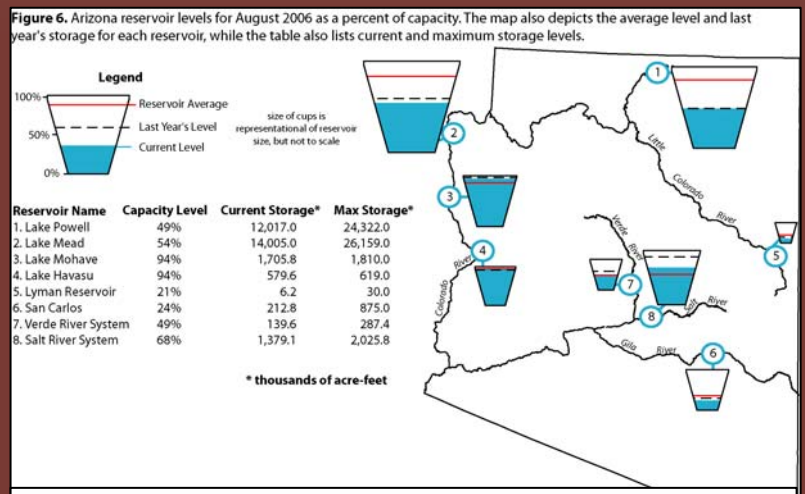


**Figure 6.** Arizona reservoir levels for August 2006 as a percent of capacity. The map also depicts the average level and last year's storage for each reservoir, while the table also lists current and maximum storage levels.

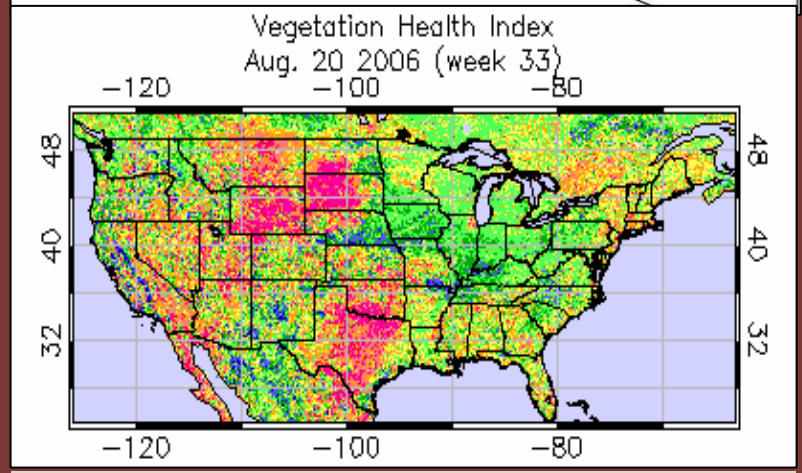
Legend

100% — Reservoir Average
50% — Last Year's Level
0% — Current Level

size of cups is representational of reservoir size, but not to scale

| Reservoir Name | Capacity Level | Current Storage* | Max Storage* |
|---|---|---|---|
| 1. Lake Powell | 49% | 12,017.0 | 24,322.0 |
| 2. Lake Mead | 54% | 14,005.0 | 26,159.0 |
| 3. Lake Mohave | 94% | 1,705.8 | 1,810.0 |
| 4. Lake Havasu | 94% | 579.6 | 619.0 |
| 5. Lyman Reservoir | 21% | 6.2 | 30.0 |
| 6. San Carlos | 24% | 212.8 | 875.0 |
| 7. Verde River System | 49% | 139.6 | 287.4 |
| 8. Salt River System | 68% | 1,379.1 | 2,025.8 |

* thousands of acre-feet

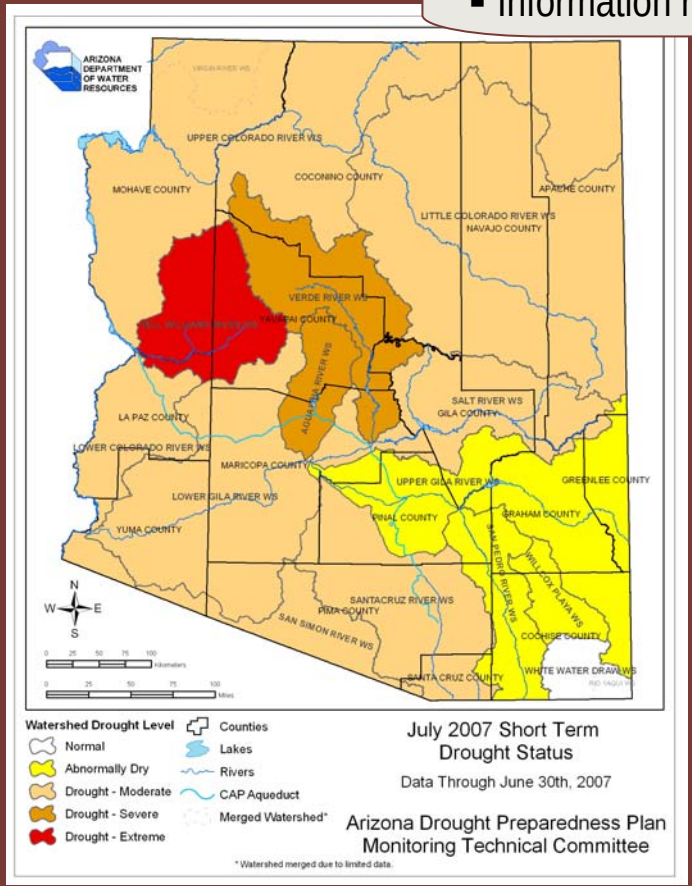



(Images taken by the National Oceanic and Atmospheric Administration's National Environmental Satellite, Data and Information Service (NESDIS))

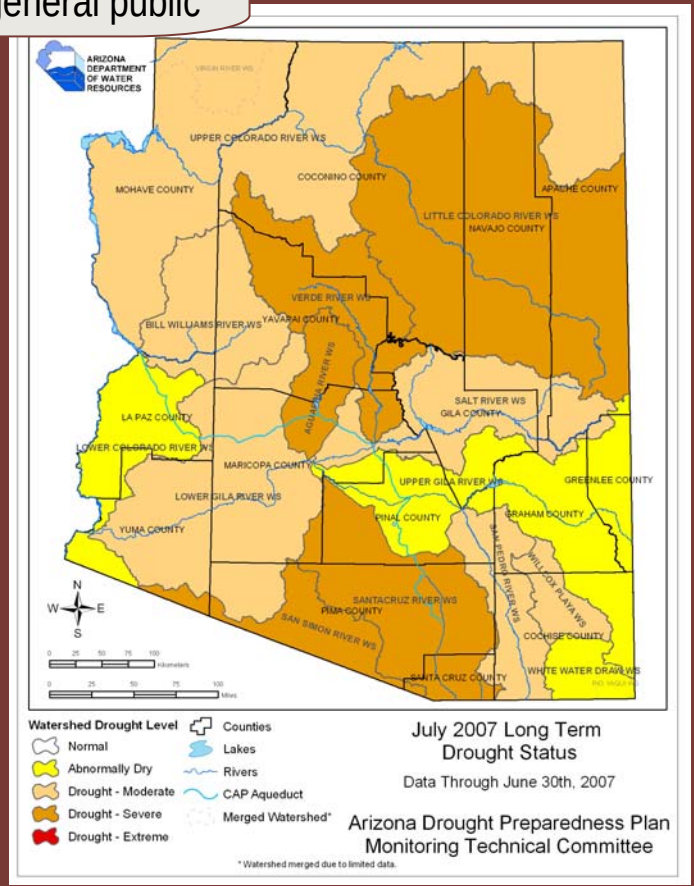
# Drought Status Maps

*July 2007*

- Planning tool for resource managers
- Information resource for general public




Short-term Drought Status

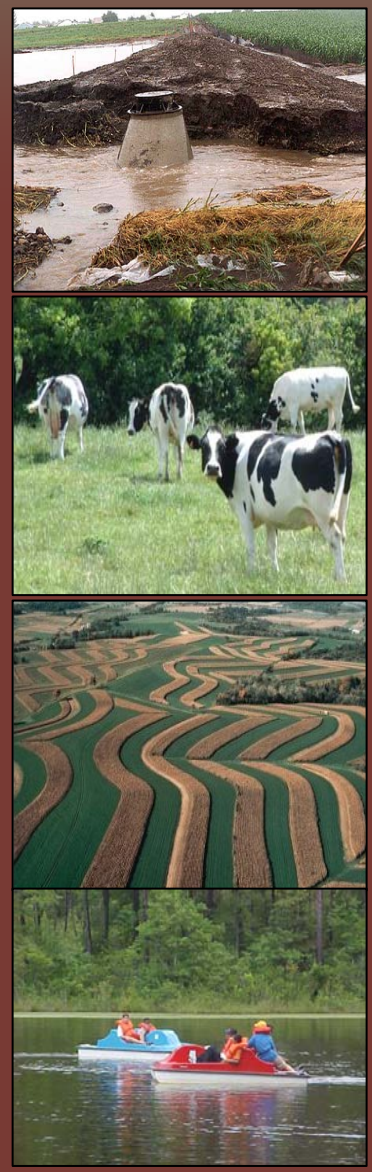



Long-term Drought Status

# Local Drought Impact Groups

## Empowering Local Leaders

- Education: how to engage the public in drought planning after it rains?
- Monitoring: how do you obtain drought impact data and assess the severity, societal impacts, and costs?
- Mitigation: how do you coordinate local drought mitigation and response, conservation measures, and planning needs?

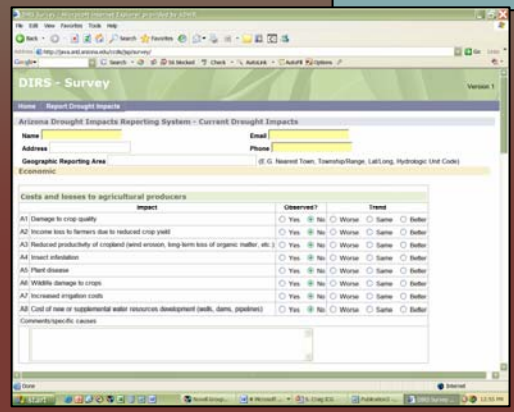


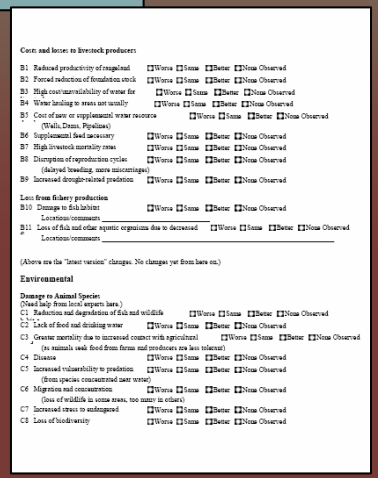
# Local Drought Impact Groups

- Identify local drought-related impacts
- Define and assess
  - societal impacts
  - severity
  - loss and costs associated
- Identify response options
- Identify unmet needs or needs for response
- Identify and facilitate efforts to mitigate impacts
- Provide data to Monitoring Technical Committee

# Participant Groups

Report Drought Impacts checklist or online



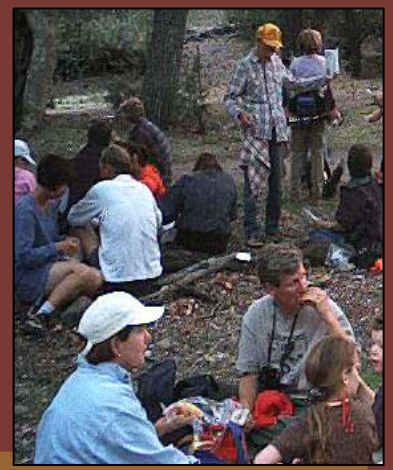




## Outreach & Education

- Improve awareness
- Education the public

## Monitoring

*Goal* Help the community, local and state government define **societal and economic impacts of drought** for better planning and response

## Drought Preparedness

- Develop mitigation and response strategies
- Identify funding and legislation needs

# Local Drought Impact Groups

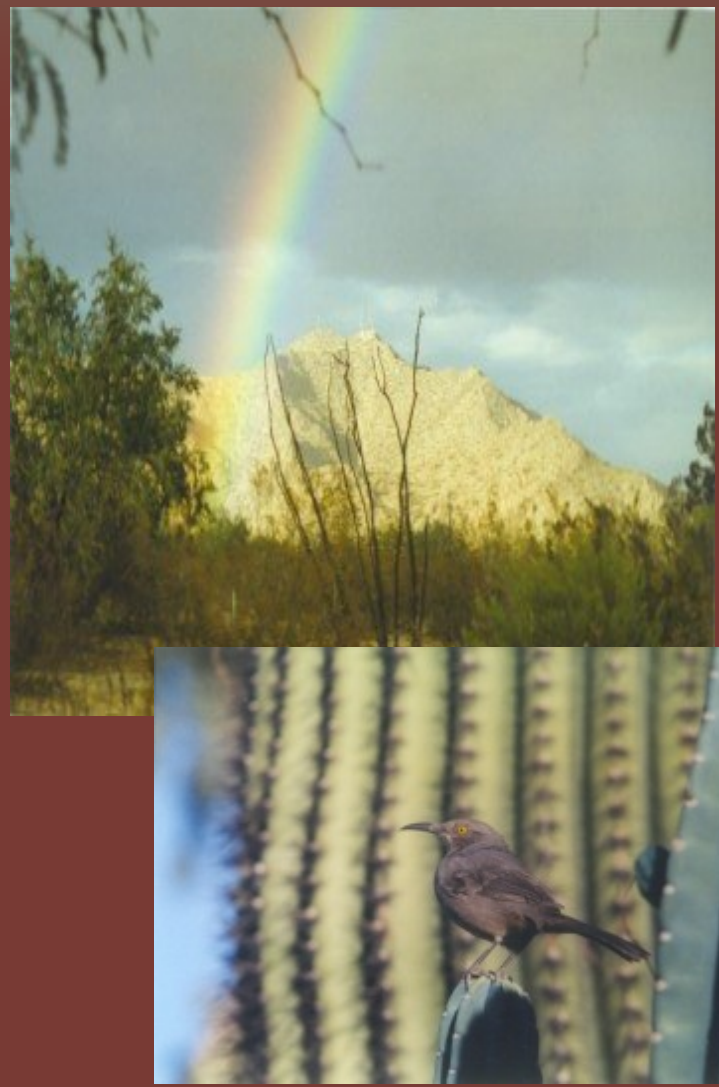
| Estimated Timeframe | Counties |
|---|---|
| In progress | Cochise<br>Pinal<br>Santa Cruz<br>Pima<br>Yavapai<br>Graham<br>Greenlee |
| Initial stage | Apache<br>Navajo<br>Mohave |
| Up next | Coconino |
| To be determined | Gila<br>Maricopa<br>La Paz<br>Yuma |

## Local Coordinators

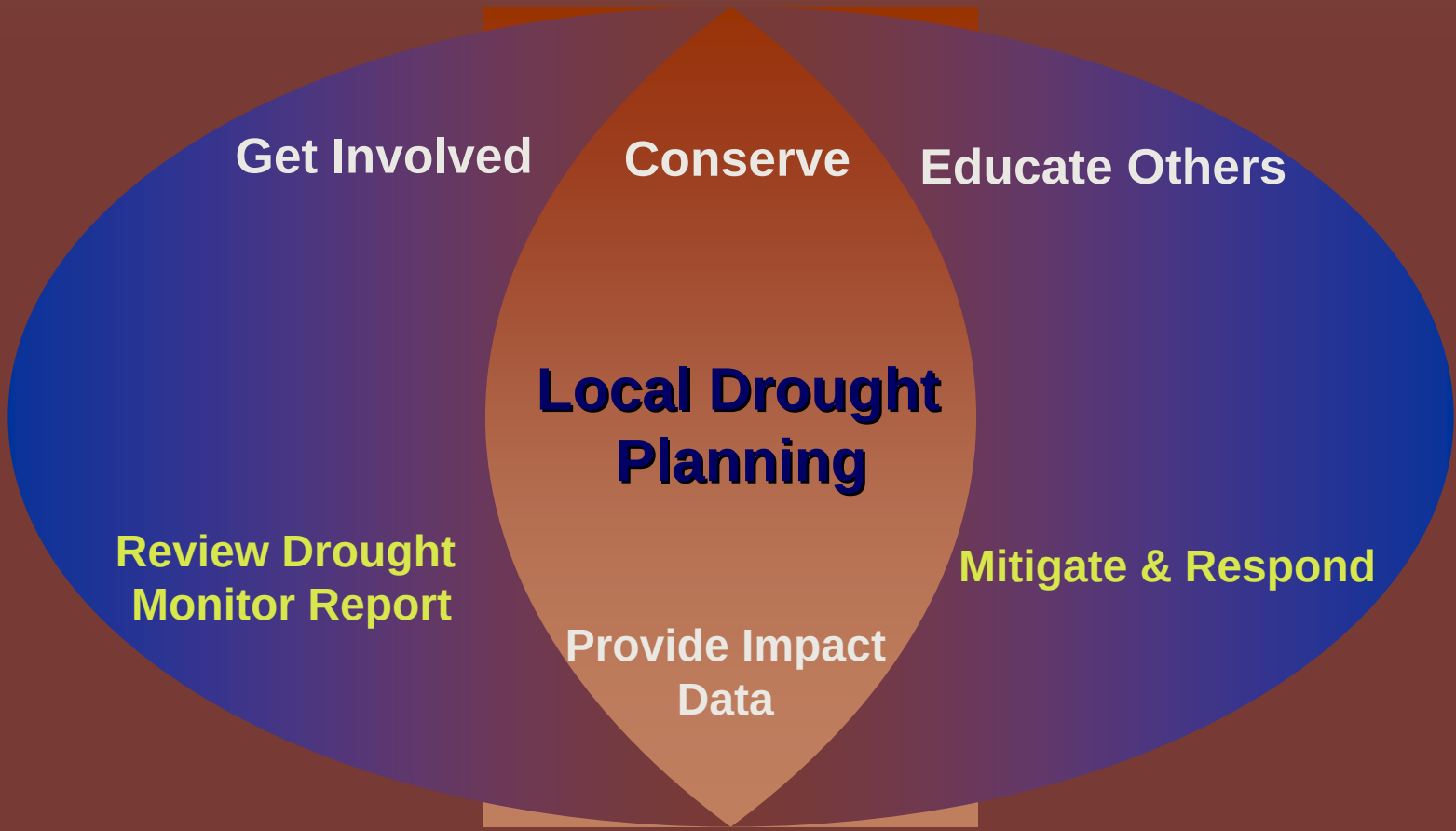
- AZ Cooperative Extension County Agent
- County Emergency Manager

# How Will Communities Benefit?

- Local impacts identified
- Accurate drought status
- Prepared to deal w/ drought
- Drought mitigation & response tailored to local area
- Reduce costs associated with impacts
- Regional planning



# We Need You


Get Involved
Conserve
Educate Others
Local Drought Planning
Review Drought Monitor Report
Mitigate & Respond
Provide Impact Data

# What Can You Do Today?

- Be aware of your water use habits and determine where they can reasonably cut back.

Wise water use has the added benefit of saving you money

# Outdoor Water Saving Tips

- Minimize grass areas
- Check all hoses, connectors and spigots regularly, and repair leaks as necessary
- Use a broom instead of a hose to clean driveways or sidewalks
- Cover swimming pools and spas
- Water plants and grass only when necessary

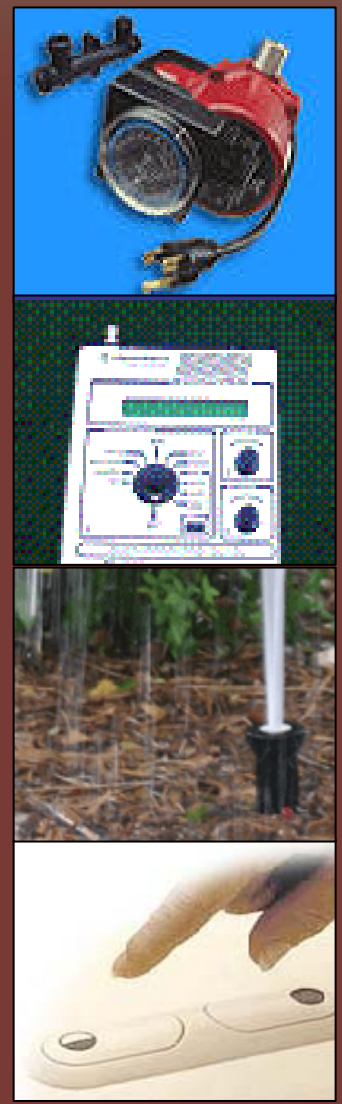
# Indoor Water Saving Tips

- Check faucets and pipes for leaks, and repair or replace as necessary
- Choose low water-use appliances
- Replace toilets with high efficiency or dual flush models
- Do not pre-rinse dishes before putting them in the dishwasher

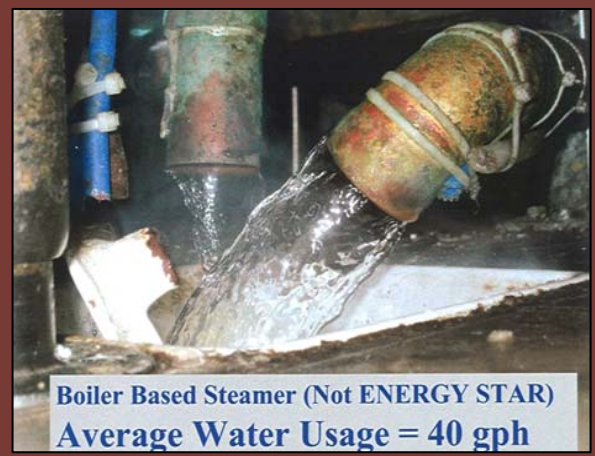
A 1-gallon per minute leak wastes 1,000 gallons per day and 525,000 gallons per year. Even a steady stream of water can waste more than 40 gallons per day

# New Water Efficient Technologies

- Hot water re-circulating pumps
- Irrigation controllers
- Vertical stop devices for sprinkler risers
- Dual flush & high efficiency toilets



# New Water Efficient Technologies



# Technologies Being Tested

- Water Efficient Salon Sprayers
  - People and pet applications

# Education, Education, Education

- Coordinating
- Messaging
- Implementing

LDIGs play a vital role

# Thank you !

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"*This place of exceptional beauty is not ours to own, it is only ours to care for, for the time that we are here*."
Governor Janet Napolitano

USDA NRCS